

Application No.: 10/814,992
Amendment dated: October 10, 2006
Reply to Office Action of March 30, 2006
Attorney Docket No.: 56229-153 (ANAK-248)

C. REMARKS/ARGUMENTS

1. Rejection of Claims 1, 2, 4-17, and 19-22 Under 35 U.S.C. § (112) ¶ 1

Claims 1, 2, 4-17, and 19-22 stand rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for determining voltage between a cathode and an x-ray emissive target, does not reasonably provide enablement for determining the operating voltage for other components in an x-ray apparatus.

In response, Applicant has amended independent claims 1 and 16 (see section B above), to include the limitation that the x-ray apparatus includes an x-ray source that is configured to generate the x-rays, and that includes an electron source and an x-ray emissive target. Claims 1 and 16 have also been amended to include the limitation that the first and second operating voltages are operating voltages of the x-ray source.

As stated by the Examiner in the Office Action, the specification does disclose determining and setting operating voltages in an x-ray source (e.g. an x-ray tube). See e.g. specification paragraph [0024], 5th line: ". . . The kVp of the x-ray source 14, i.e. the x-ray source operating voltage, provides the accelerating voltage for accelerating the electrons from the electron source towards the x-ray emissive target 30. . . ."

Applicant therefore respectfully submits that the above-described amendments to claims 1 and 16 overcome the above §112 ¶ 1 rejection to these claims, as well as the §112 ¶ 1 rejection to claims 4-5 and 7-15 (all of which depend on claim 1), and 19 - 22 (all of which depend on claim 16). (Claims 2, 6, 17, and 19, directed to limitations that have now been added in section B by amendment to claims 1 and 16, have been cancelled.)

Applicant submits that the above rejection of claims 1, 2, 4-17, and 19-22 under 35 U.S.C. 112, first paragraph, has thereby been overcome.

2. Rejection of Claim 18 Under 35 U.S.C. § 112 ¶ 2 / Allowable Subject Matter

In response to the Examiner's rejection, claim 18 has been amended to delete the redundant limitation directed to operating voltage.

Applicant submits that the rejection of claim 18 under 35 USC § 112 ¶ 2 has thereby been overcome.

Application No.: 10/814,992
Amendment dated: October 10, 2006
Reply to Office Action of March 30, 2006
Attorney Docket No.: 56229-153 (ANAK-248)

3. **Rejection of Claims 1, 2, 7, 8, 11, and 15 under 35 U.S.C. § 102(b)**

Claims 1, 2, 7, 8, 11, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,501,819 to Unger et al. ("Unger"). In particular, the Examiner noted that the features relied on by Applicant to distinguish the present application from Unger were not recited in the rejected claims.

In response, Applicant has amended independent claim 1 to include the limitations that the first sampling interval and the second sampling interval are each relatively small compared to the total exposure period.

The subject matter of Unger is distinguishable from Applicant's application, which discloses a method and system for improving the quality of an image, obtained during a single x-ray exposure period, by operating the x-ray apparatus at different operating voltages during sampling intervals that are much smaller than the single x-ray exposure period of that image. In contrast, Unger discloses implementing two (or more) different x-ray exposures, each carried on during two separate x-ray exposure periods. The second exposure is described in Unger as being taken after the first image is segmented.

In particular, Applicant submits that the independent claim 1, as currently amended, is not anticipated by Unger, because Unger does not teach or suggest at least the following limitations of claim 1:

B. during a first sampling interval Δt_1 in the beginning of the x-ray exposure period, operating the x-ray apparatus at said first operating voltage level kVp_0 and using one or more sensors to detect x-rays that have passed through at least a portion of the object during the interval Δt_1 , wherein the first sampling interval Δt_1 is relatively small compared to the x-ray exposure period;

C. after said first sampling interval Δt_1 , processing the output signals from said sensors to determine a second operating voltage level kVp_1 ;

D. during a second sampling interval Δt_2 within the same x-ray exposure period, operating said x-ray apparatus at said second operating voltage level kVp_1 and using said sensors to detect x-rays that have passed through at least a portion of the object during the interval Δt_2 , wherein the second sampling interval Δt_2 is relatively small compared to the x-ray exposure period; and